INITIAL PLAN OF EXPLORATION
PIKKA UNIT

COLVILLE RIVER DELTA AREA, ALASKA

Outlined below is the initial Plan of Exploration for the proposed Pikka Unit. The proposed Unit will encompass approximately 63,304 acres of land within the Colville Delta area and shallow waters of Harrison Bay, Alaska. The proposed Unit is located between the Colville River Unit to the west, the Oooguruk Unit to the east, and the Placer and Tofkat Units to the south. The Plan of Exploration is a 1 year forecast of planned unit activities. Formation of the proposed Unit will allow the orderly development of four discovered reservoirs .

Prior Exploration Activities

The area surrounding the proposed Unit has been the site of numerous exploratory wells, including fifteen wells that were drilled within the proposed Unit outline. The exploratory activity can be divided into four distinct phases with each phase dominated by different operators. Early exploration was focused on Ellesmerian structural targets, while later exploration focused on Jurassic and Cretaceous combination stratigraphic/structural traps.

The earliest exploration in the area occurred during the period immediately following the discovery of the giant Prudhoe Bay and Kuparuk River Fields. The Gulf Oil Corp. Colville Delta State #1 was drilled in 1970 to a total depth of 9,299', just penetrating the top of the Mississippian Endicott Group. Mudlog oil shows were noted in the Tuluvak Formation, the Cretaceous Nanushuk Group, the Sag River Sandstone, the Ivishak Sandstone and the Lisburne Group. Two of the show intervals were tested. The first test was the Ivishak which recovered 114 BPD of muddy formation water with a trace of oil. The second zone tested was a silty/sandy interval near the top of the Nanushuk Group. The zone would not flow but .06 barrels of 20.8° API oil and water were recovered during reverse circulation of the DST string. The zone was then acidized and swabbed dry to 3,800'. None of the untested show intervals appear productive based on wireline logs. The Nuiqsut sand was not present due to erosion by the LCU and the Nechelik sand was shaled out in the Colville Delta State #1.

The next phase of exploration in the proposed Unit area was in the mid-1980's and was predominantly conducted by Texaco with Amerada Hess also drilling one well. The Texaco Colville Delta #1 was drilled in 1985 to a depth of 9,457' in the Endicott Group and was the discovery well for the Nuiqsut sand interval of the Jurassic Kingak Shale. A number of zones with mudlog shows were tested. The first test was of siltstones at the top of the Endicott Group and only 1.5 barrels of mud were recovered during reverse circulation. Two tests were run in the Ivishak sands. The first was from the lower portion of the Ivishak and recovered 29 barrels of mud and water during reverse circulation. The upper Ivishak was then tested and recovered 70 barrels of water. Two tests were also run in the Sag River sandstone; the first test recovered only 2 barrels of mud during reverse circulation. The same zone was then reperforated and retested with 2 barrels of mud recovered. The Nuiqsut sand in the Colville Delta #1 has 144' of net pay and three separate intervals were tested. The lower interval of the Nuiqsut tested at a rate of 31 BPD of 22.7° API oil. It was then acidized and produced at a rate of 25 to 100 BOPD on nitrogen lift. The middle zone of the Nuiqsut produced at a rate of 30 BPD of 17.7° API oil on nitrogen lift. The upper portion of the Nuiqsut has the best sand development and tested rates of 373 to 1075 BPD of 25° API oil with a GOR of 400-500 after fracture treatment. A sidetrack, the Colville Delta #1A was also drilled in 1985 through the Nuiqsut interval in order to acquire whole core of the Nuiqsut sand.

In 1986 Texaco followed-up on the Nuiqsut discovery by drilling the Colville Delta #2 and Colville Delta #3. The Colville Delta #2 was drilled to a depth of 6,800' just through the base of the Nuiqsut sand. The Nuiqsut was perforated over a 178' interval and after two fracture treatments flowed at a rate of 200 to 800 BOPD. The Moraine sand interval of the Cretaceous Torok formation was also tested and flowed 44 barrels of water with a trace of oil. The Colville Delta #3 was drilled to the base of the Nuiqsut sand for a total depth of 6,800'. The Nuiqsut sand was tested and flowed 290 BOPD after fracture treatment. The Moraine sand was also tested and flowed 235 barrels of 16-20° API oil after fracture treatment. Also in 1986 Amerada Hess drilled the Colville Delta #25-1 to a depth of 6,871', about 100' below the base of the Nuiqsut. Specific information for the Nuiqsut test is not available in the State files; however, the completion report indicates that the Nuiqsut flowed at an average rate of 159 barrels of 25° API oil with a GOR of 200 to 835 SCF/STB. A 21' thick sand with mudlog shows was encountered in the Kup "C" but was not tested.

The next phase of exploration in the area of the proposed Unit began in the early 1990's continuing through the early 2000's and was largely conducted by Arco Alaska. The Fiord #1 was drilled in 1992 and is considered the discovery well for the Fiord Field Nechelik and Kup "C" sands. A well test of the Kuparuk "C" sand flowed 1,065 BOPD of 33° API oil. The Nechelik sand was also tested and flowed 180 BOPD of 28° API oil. The Nuiqsut sand was encountered in a depositionally distal position with poor sand development and no shows reported on the mudlog. Oil shows from the Nanushuk sands were noted on the mudlog for the Fiord #1; however, poor quality wireline logs make evaluation difficult and the zone was not tested.

In 1993 Arco drilled 4 wells, the Kuukpik #3, Till #1, Colville River #1 and PB1. Each of the three wells was drilled to the upper Kingak Shale except the Colville River PB1 which was drilled to the Kup "C". The Kuukpik #3 tested four zones, the Nuiqsut sand, Kup "C" sand, lower Torok Formation, and the Tuluvak Formation. The Nuiqsut had a final flowing rate on nitrogen lift of 24 BOPD after fracture treatment. The Kup "C" had a final rate of 20 BPD of 23° API oil also on nitrogen lift. Engineering analysis and petrophysical evaluation of wireline logs indicate that the tests are not indicative of true productive capability due to formation damage. A DST of a 56' thick sand in the lower Torok Formation flowed 90 BWPD on nitrogen lift and a DST of a 26' thick sand in the Tuluvak Formation flowed intermittently on nitrogen lift an unspecified amount of an oil, water and mud mixture. The oil gravity was approximately 21° API. The main zone of interest for the Till #1 and Colville River #1 is the Nuiqsut sand. The Nuiqsut is fairly well-developed in the Till #1 with 63' of net pay and good mudlog shows but was not tested. The Nuqisut in the Colville River #1 is depositionally distal and is siltier with poor mudlog shows. No other zones of particular interest were present in the Till #1, Colville River #1, or Colville River PB1 wells and no tests were run.

In 1994 Arco drilled the Fiord #2 to a depth of 8,400' just below the base of the Nuiqsut sand. Despite the presence of three zones of interest no tests were run. The deepest zone of interest is the Nuiqsut sand which is finer grained and has lower porosity than in wells located to the east but still has over 65' of sand and good mudlog oil shows. Calculations from wireline logs also indicate potentially movable hydrocarbons. About 150' above the Nuiqsut is a 6' sand with excellent mudlog shows that correlates to the Alpine "C" sand that is being produced at Alpine Field. Since the Fiord #2 was drilled prior to the official discovery for the Alpine Field the significance of this sand was not recognized and it was not tested. The final zone of interest is the Tuluvak Formation at a depth of 2,860' MD. Strong mudlog shows were encountered from sands at the top of the Tuluvak; however the shallow depth and colder temperatures make produceability problematic.

Arco drilled the Fiord #3 and #3A in 1995 to depths of 7,030' and 9,147' respectively. Both wells penetrated just the upper portion of the Nuiqsut sand. The Nuiqsut sand is only partly covered by wireline logs, precluding meaningful evaluation other than to note that it had good mudlog oil shows in both wells. The Alpine sand has 20' of net pay in the Fiord #3 and 51' of net pay in the Fiord #3A with excellent mudlog oil shows in both wells. Although neither well was tested they would almost certainly be productive based on the comparison to wireline log calculations for producing wells at Alpine Field. In 2010 ConocoPhillips drilled the Colville River Unit CD 1-15 as a horizontal production test located about a half mile west of the Fiord #3A. The Fiord #3 had good mudlog shows from sands in the middle and lower portions of the Torok Formation that were not tested. The sand near the base of the Torok is 28' thick with good porosity and hydrocarbon saturation based on log calculations. In addition, excellent mudlog shows and favorable mobility from an MDT indicate that the sand contains moveable oil. The equivalent Torok zones were not well developed and had very poor mudlog shows in the Fiord #3A though it is located less than a mile away from the Fiord #3. The Nanushuk Group and the Tuluvak Formation had very good mudlog shows in both the Fiord #3 and #3A, but they were also not tested in either well. The Tuluvak Formation would have the same concerns about depth and temperature as in the Fiord #2.

In 1999 Arco drilled the Fiord #4, Fiord #5 and Fiord #5PB1 wells to further delineate the Nechelik and Kup "C" sands at Fiord Field. The Fiord #4 encountered approximately 90' of oil saturated Nechelik sand that was not tested but is almost certainly productive based on comparison to wireline log calculations for known productive wells and results from MDT's. Two sand benches in the Nanushuk Group were present with thicknesses of 11' and 36' and good mudlog oil shows. Fair mudlog oil shows were encountered from silty sands in the lower portion of the Torok Formation. The Kup "C" sand was not present in the Fiord #4. The Fiord #5 found oil saturated sand in both the Kup "C" (~15' thick) and Nechelik (~128' thick). The Nechelik sand was tested and flowed 1,400 BOPD of 29° API oil. A second test was run commingling the Nechelik sand with the Kup "C" sand. The second test flowed 2,500 BOPD of 30.5° API oil. Again, mudlog oil shows were noted throughout the Nanushuk Group with five sand benches present ranging in thickness from 10' to 20'. A sidetrack to the Fiord #5, the Fiord #5PB1 was drilled for the purpose of acquiring a whole core of the Nechelik sand. The Nuiqsut sand was not present in either the Fiord #5 or Fiord #5PB1 due to erosion by the LCU.

In 2004 ConocoPhillips drilled the Placer #1 and Placer #2. The Placer #1 was drilled to a depth of 7,761' in the Cretaceous Miluveach Shale and the Placer #2 to a depth of 9,118' in the lower portion of the Nuiqsut sand. The Placer #2 encountered about 45' of net pay near the top of the Nuiqsut sand interval with good mudlog oil shows but it was not tested. The Kup "C" has about 16' of sand with very good mudlog oil shows in the Placer #1 but is not present in the Placer #2. A sample of 26.8° API oil was obtained during an MDT of the Kup "C" in the Placer #1. Both wells encountered significant mudlog gas increases in a silty interval of the Nanushuk Group but had no significant oil indicators.

Repsol drilled their initial exploration well in the proposed Unit area in 2012. The Qugruk #2 was drilled to a depth of 2,525' where it encountered a gas kick from the Tuluvak Formation and was abandoned.

Repsol came back in 2013 and drilled four wells and two side-track horizontal wells. The Qugruk #1 well was drilled to a depth of 7,050' in the Kingak Shale. The Qugruk #1 well was drilled as well as a horizontal side track that was fracture stimulated. The Qugruk #3 well was drilled to a depth of 7,500'. The Qugruk #3A side track well shared the same surface as the Qugruk #3. The Qugruk #6 was drilled to a depth of 7,809'.

In 2014 Repsol drilled two wells and one side track in the proposed Unit area. The Qugruk #5 was drilled to a depth of 7,430'. The Qugruk #5A was the sidetrack drilled. The Qugruk #7 was drilled to a depth of 7,176'.

Drilling Program

Operator agrees to drill three wells during the next five years, these wells will include, at a minimum, the following wells, all of which are currently being drilled:

Qugruk #8 – Surface and bottom hole locations are in Section 18 of T11N-R6E, UTM 6, NAD 27 meters, x-360177.0, y-7804889. Estimated TD 5,100'. It is being drilled to core and evaluate a potential pay zone. If time permits a production test will be performed.

Qugruk #301 – Surface location is in Section 6 T11N-R6E, UTM 6, NAD 27 meters, x-360868.0, y-7807205.0. Estimated bottom hole location is UTM 6, NAD 27 meters, x-361279.0, y-7808376.0. Estimated TD 4146'. It is being drilled to a potential pay zone.

Qugruk #9 – Surface location is in Section 6 T12N-R6E, UTM 6, NAD 27 meters, x-630177.0, y-7804889.0. Estimated bottom hole location is UTM 6, NAD 27 meters, x-362043.7, y-7816196.5. Estimated TD is 7,300'. It is being drilled to a depth sufficient to evaluate a potential pay zone. If time permits a side track will be drilled.

Nothing herein shall prohibit Operator from moving toward development in the immediate future.